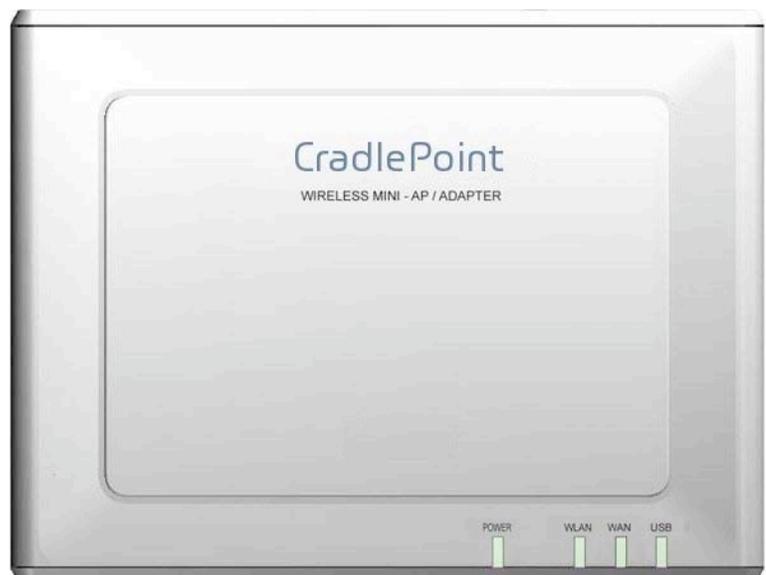




CTR Cellular Travel Router User's Manual



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Compliance Notes

FCC Notice:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device *may* not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution:

The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the warranty and users' authority to operate the equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Caution:

To comply with the FCC RF exposure compliance requirements, this device must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada Notice:

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met. This product meets the applicable Industry Canada technical specifications of the RSS210.

This class B device complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

FCC COMPLIANCE STATEMENT

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Introduction

WELCOME

The CradlePoint CTR (Cellular Travel Router) is a high-performance Broadband Cellular Gateway designed to provide fast and convenient Internet access while connected to a Cellular modem or handset. The CTR provides a straightforward and portable Internet connection leveraging advances from CradlePoint Technologies, Inc. The CTR includes the following features:

- Establishes shared network connection via standard WAN PPP when connecting DSL, Cable Modem, or other uplink to Ethernet port
- Establishes shared network connection via Cellular when connecting Cellular Phone or Cellular Modem to USB port
- Designed to work with all 3G cellular service provider networks
- Supports up to 128-bit WEP and WPA encryption for data-security
- Supports Virtual Private Network (VPN) pass-through
- Supports 1 Wired LAN connection
- Rugged but compact design is perfect for fixed or mobile applications
- Software algorithms boost efficiency, performance, and improve perceived network speed
- Auto-Upgrade Notification helps keep user updated with latest system CTR software revision
- GUI-based device management from any standard web Browser

PACKAGE CONTENTS

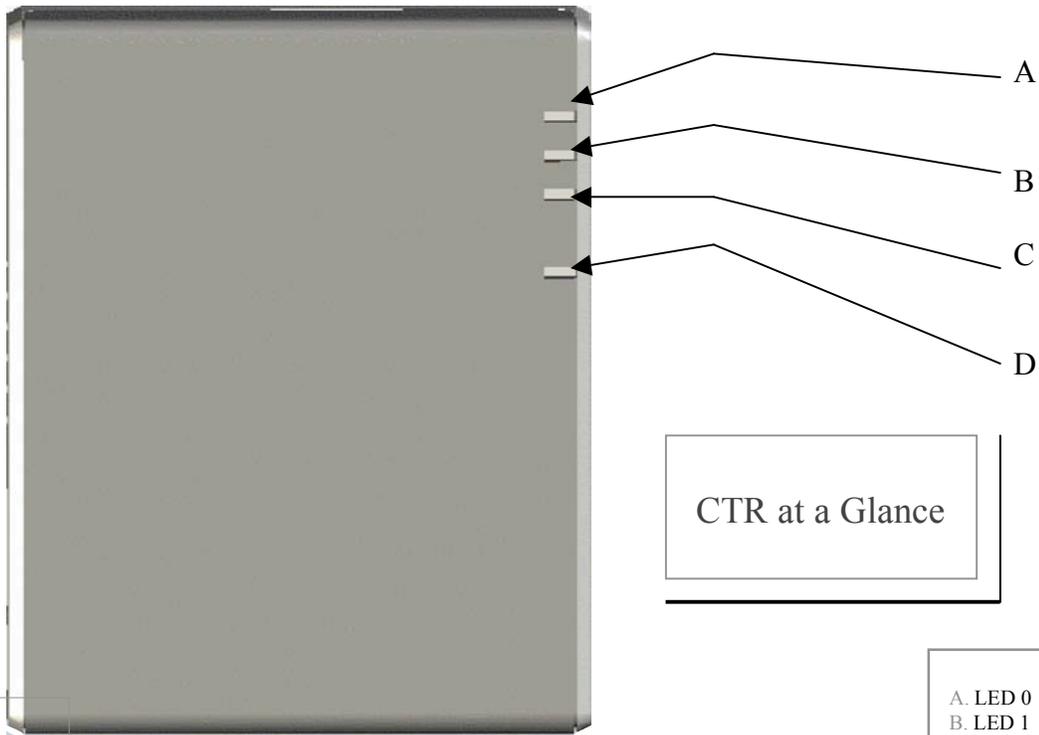
- CradlePoint CTR Cellular Travel Router
- Power Adapter (5V/2.5A)
- CD-ROM with Manual
- Quick Installation Guide
- Carrying Case

Note: Using a power supply with a different voltage than the one included with your product will cause damage and void the warranty for this product.

If any of the above items are missing, please contact your reseller.

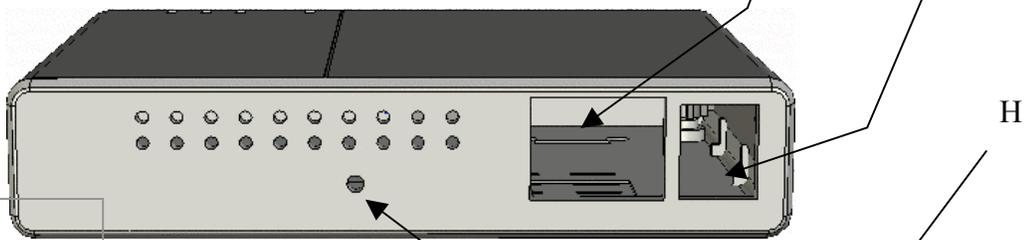
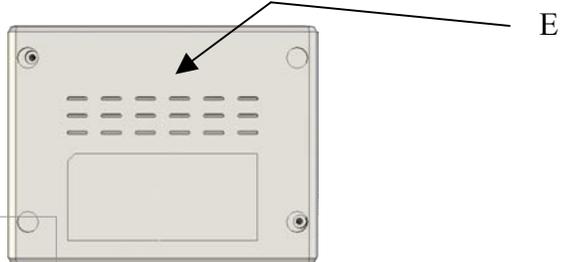
OVERVIEW OF FEATURES

- Instantly creates a personal WiFi Hotspot anywhere within the Cellular Service Providers' network.
- No software to install: Follows simplicity of 802.11 wireless standards
- Supports multiple simultaneous wireless LAN clients
- Includes advanced wireless router features:
 - NAT/NAPT Firewall
 - DHCP Server
 - Security - MAC Address Filtering or WPA or WEP Encryption
 - Web-based Configuration and User Interface
- Automatic firmware upgrades
- Bridges from Cellular phone/modem connection to wired Ethernet for a no-software secure Internet connection
- Recharges the handset battery and CTR internal battery when connected to an external power source.
- Windows, Macintosh and Linux support.

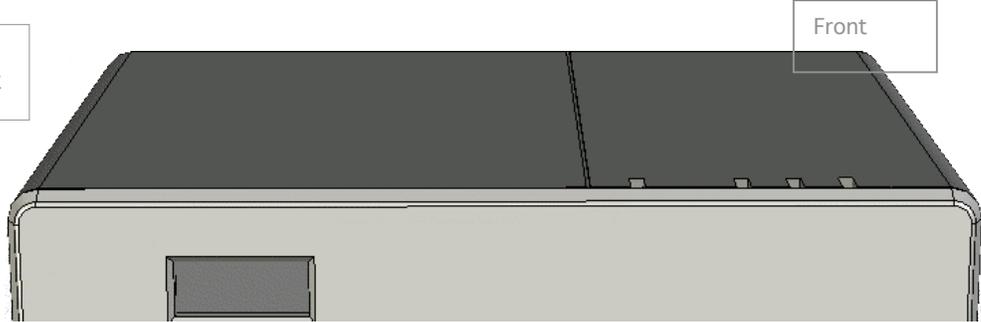


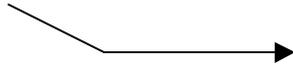
CTR at a Glance

- A. LED 0 - USB Status
- B. LED 1 - LAN Status
- C. LED 2 - WLAN Status
- D. LED 3 - Power Status
- E. Ventilation Slots
- F. CAT 5 (Ethernet) Port
- G. Power Connector
- H. Factory Reset Button
- I. USB Port



Input / Output





Using the Controls

A	LED 0 – USB Status	Green OFF	Connection to USB port is established. USB port not in use.
B	LED 1 – WAN Status	Green OFF	Wide Area Network is ready via the Ethernet port. Ethernet port not in use or the connection is not secure. Port not in use.
C	LED 2 – WLAN Status	OFF	No handset connected, unit is negotiating the connection, or no WLAN available.
D	LED 3 – Power Status	Green OFF	CTR is connected to external power / on. CTR is OFF.
E	Ventilation Slots		These allow excess heat to be removed from the CTR while operating. It is recommended that the unit not be covered with any material that will block the dispersion of heat away from the unit. The unit should not reach extreme temperatures.
F	Ethernet Port		The Ethernet port allows you to connect to the unit via CAT5 cable on a LAN. OFF The unit is completely OFF when the unit is not connected to external power and the ON / OFF switch is in the OFF position. The unit will charge its own battery and the phone battery if switched OFF and connected to external power. Note: The option to charge the phone's battery must be selected in the CTR setup pages. The unit will ONLY charge the phone battery when switched OFF and NOT connected to external power. Note: The option to charge the phone's battery must be selected in the CTR setup pages. * No access to the router or the wireless network can be established while the unit is OFF.
G	ON / OFF Status & External Power Connection	ON	<div style="border: 1px solid black; padding: 5px; text-align: center;">CAUTION: Using a power supply with a different voltage than the one included with your product will cause damage to the unit and void the warranty.</div> If the unit is ON and not connected to a phone or handset, it's Setup / Help Pages are still accessible by associating with its SSID (Network Name) and entering 192.168.0.1 into the URL bar of a web browser. Note: Login will be required to access the CTR Setup / Help Pages If the unit is ON and connected to a fully operable data-enabled cell phone or USB modem a wireless network will be automatically established. The laptop will automatically associated with the network. In some cases the user will need to selected the wireless network from their laptop's wireless network list. (Details vary by Operating System.) The unit will operate off external power exclusively while connected to an external power source. If there is sufficient excess power available the unit will also charge the phone. The power connector is a standard jack size and when connected to the proper cable and an external power source will power the CTR according to the specifications listed in the ON / OFF switch section of the Controls list.
H	Factory Default Reset Button		To return all the User Defined configurations (such as those specified in the Setup / Help Pages) to their original factory default settings simply turn the unit OFF, press and hold the Factory Default Reset button, and turn the unit ON. After the LEDs have flashed ON then OFF then ON again, release the button. All setting should be reset.
I	USB-to-Modem Port		This is a standard USB port that is used to connect either to a USB modem or to a data-enabled cellular phone. Cables for USB to Data connection vary by phone manufacturer and are not provided with the CTR. Contact your service provider for further information.

Getting Connected

The CTR supports two methods of connecting to the Internet: 1) a standard wired-WAN connection such as a DSL, Cable, or Hotel Ethernet, or hosted LAN connection; or 2) a Cellular modem connection using either a data-enabled handset or USB Modem. In the Wired-WAN case, connect the LAN cable into the Ethernet port of the CTR and it will establish a connection to the Internet. In the Cellular case, plug your USB modem or handset into the USB host port and the CTR will establish a connection to the Internet.

The CTR unit will begin broadcasting signals to create a local Wireless LAN network. If using a cellular phone, be sure you have configured the phone's settings to act as a modem and have established a 'data plan' with your carrier/operator. Note that even though you may have a "Data Plan" for Internet access on the phone, there may be a separate option to enable 'tethered data'. If you do not have this option activated, you must contact your cellular carrier to activate this service. From your PC, use the wireless network finder to associate with your new wireless network. The first time you use the CTR your network will be named:

CTR-xxx

Where 'xxx' is the last three digits of the CTR's 12 character MAC address (the MAC address is individualized and unique to each unit). This MAC Address is printed on the bottom label of the CTR.

Once your computer has associated with your wireless network, open a standard Internet Browser application on your PC and you will be prompted to enter a password. The default password is the last six (6) characters of the MAC address (again, printed on the bottom of the unit). Once logged in, you will be presented with a 'successful logon' screen, indicating you can begin access the Internet with any of your PC applications. If you want the CTR to automatically recognize your PC, click the 'Remember Me' option, and your PC will be automatically logged in upon WLAN association. It is recommended that you change your password after your first login, which is easily accomplished using the CTR Setup Wizard.

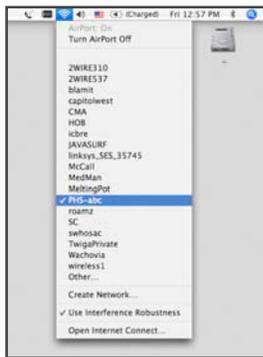
So how does it all work?

The CradlePoint CTR is a 802.11b/g WiFi router that is also able to use a cellular phone-as-modem. Regardless of the type of Internet Access you have – Wired-WAN, Wired LAN, or Cellular, the CradlePoint CTR bridges from that Internet access to a local WiFi network. The result is your own personal, portable wireless network or “hotspot”. Set it up anywhere within your service provider's coverage area whenever you want access to the Internet.

Configuring Your Wireless Network



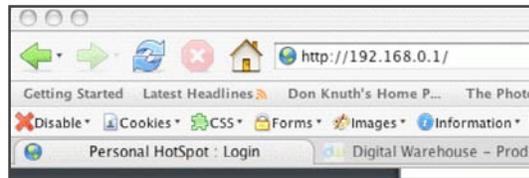
Welcome to the Help and Setup Pages!



To access the Help Pages / CTR Setup Pages:

Be sure that the CTR and Phone/Modem are ON. Select the CTR-xxx wireless network from your computer's list of Wireless Networks.

Once your computer has associated with the CTR, open Web Browser and enter <http://192.168.0.1> into the URL Address bar. This allows you to access the CTR's embedded server pages.

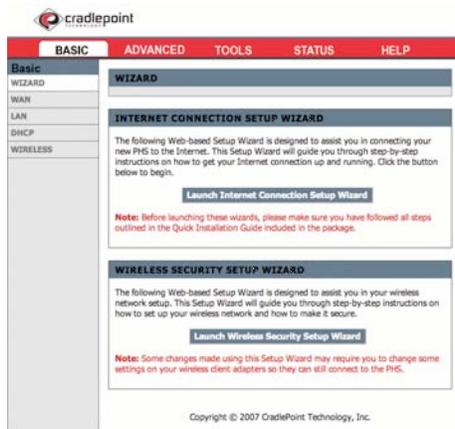


your

You will be asked to enter your Password. The password is set to the last 6 digits of the CTR MAC found on the bottom label of your CTR.



default Address



This is the home screen of the CTR Help and Setup Pages.

From here you can configure your network. It is recommended that you run the Setup Wizard when you first use the CTR. This will allow you to personalize your network name (SSID) and passwords, and you can change the security settings to meet your needs.

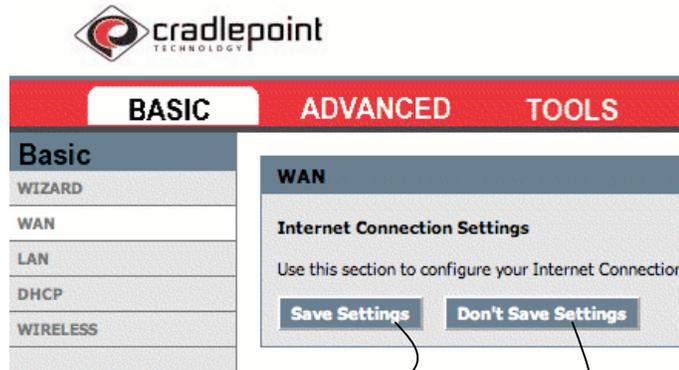
Navigating the Help and Setup Pages

Select the Main Topic tab you wish to use.

Use the side navigation menu to access subtopics.

Be sure to save your settings before leaving each page.

You can abandon all your changes at anytime by selecting "Don't Save Settings."



What you'll find in these pages

BASIC Topics

		BASIC Topics				
		BASIC	ADVANCED	TOOLS	STATUS	HELP
Wizard	These wizards are designed to assist you in configuring your wireless network once you have completed the steps found in the Getting On The Internet section of this manual. Use the wizards to name your network, set your new password, and set the security levels for your new CTR.					Internet Connection Setup Wizard Internet Security Setup Wizard
WAN	This page is used to set your Internet connection type. For most users, the default settings are appropriate for everyday usage.					Specify DNS Servers Advanced DNS settings MTU Settings Link Drop Delay WAN Port Speed Ping Response Settings MAC Cloning Settings
LAN	Use this page to configure the internal network settings of your CTR router. The IP Address that is configured here is the IP Address that you use to access the Web-based management interface. If you change the IP Address here, you may need to adjust your PC's network settings to access the network again. The default settings are appropriate for most everyday users.					Set IP Address Set Subnet Mask RIP Settings Set Router Metric Default Router set Enable/Disable IGMP Enable/Disable DNS Relay
DHCP	This page is used to configure the built in DHCP Server to assign IP Addresses to the computers on your network.					Enable/Disable DHCP Server Specify DHCP IP Address Range Specify Lease Time Enable DHCP Broadcast View DHCP Clients Add DHCP Reservation View Reservations List Enable/Disable Wireless Radio
Wireless	This page is used to configure your basic wireless settings for your CTR. From here you can set the visibility of your network to others, your wireless					Set SSID Set Network Visibility Auto/Manual Channel Select

network name, and security type. Some of these features may have already been set by you if you used the Setup wizards on the main screen of the Help and Setup Pages.

Set Transmission Rate
Set 802.11 Mode
Set "Super G "Mode

ADVANCED Topics



BASIC	ADVANCED	TOOLS	STATUS	HELP
Virtual Server	The Virtual Server option allows you to define a single public port on your router for redirection to an internal LAN IP Address and Private LAN port if required. This feature is useful for hosting online services such as FTP or Web Servers.			Add Virtual Server View Virtual Servers List
Special Applications	The Special Applications option is used to open single or multiple ports on your router when the router senses data sent to the Internet on a "trigger" port or port range. Special Applications rules apply to all computers on your internal network.			Application Level Gateway (ALG) Configuration Add Special Applications Rule View Spec Applications Rules List
Routing	The Routing option allows you to apply fixed routes to defined destinations.			Add Route View Added Routes List View Existing Routes List
Access Control	The Access Control option allows you to control access in and out of your network. Use this feature as Access Controls to only grant access to approved sites, limit web access based on time or dates, and/or block network access for certain applications. This page includes a wizard to assist you in adding new policies.			Enable/Disable Access Control Policy Wizard View Existing Policies
Web Filter	The Web Filter option allows you to set up a list of allowed Websites that can be used by multiple users. When the Web Filter is enabled, all other Websites not listed on this page will be blocked. To use this feature, you must also select the "Apply Web Filter" checkbox in the Access Control Section.			Add Website(s) View allowed Websites
MAC Address Filter	The MAC Address (Media Access Controller) filter option is used to control network access based on the MAC Address of the network adapter. This feature can be used to ALLOW or DENY specific machines on your network.			Enable MAC Address Filter Filter Setting (Allow/Deny clients) Add MAC Address View Filters
Firewall	The DMZ (Demilitarized Zone) option provides you with an option to set a single computer on your network outside of the CTR router. If you have a computer that cannot run Internet applications successfully from behind the router, then you can place the computer into the DMZ for unrestricted internet access. This option is recommended to be a last resort, as it tends to leave the DMZ computer at a security risk.			Enable DMZ Set the DMZ IP Address
Inbound Filter	The Inbound Filter option is an advanced method of controlling data received from the Internet. With this feature you can configure inbound data filtering rules that control data based on an IP address range. You can use this to limit access to a server on your network to a system(s).			Add Inbound Filter Rule View Added Inbound Filter Rules
Advanced Wireless	These are more advanced settings for your wireless network. If you are unfamiliar with the settings it is recommended that you read the help section on this subtopic before changing any of the presets.			Fragmentation Threshold RTS Threshold Beacon Period DTIM Interval Enable 802.11d Transmit Power WDS Enable (Add WDS AP MAC Address)
Schedules	The Schedules Rules feature is used to manage parental controls and firewall rules according to a schedule you define.			Add Schedule Rule View Added Schedule Rules



TOOLS Topics

BASIC	ADVANCED	TOOLS	STATUS	HELP
Admin		The admin option is used to set a password for access to the Web-based management. By default there is not an Admin password (the default password you are familiar with by now is the User password).		Set Admin Password Set User Password Administration and Remote Settings Enable / Disable UPnP Save and Restore Configuration
Time		The Time configuration option allows you to configure, update, and maintain the correct time. From this section you can set the time zone that you are in and set the NTP (Network Time Protocol) Server. Daylight Savings can also be configured to automatically adjust the time when needed.		Time zone and Daylight savings settings Enable / Disable and set NTP Server Set the date and time manually Allows for you to copy your computer's current time settings.
Syslog		This option allows you to log information about your network. You can send this information to a Syslog Server.		Enable / Disable Syslog Server Set Syslog Server IP Address
Email		The Email option can be used to send your Syslog information to your e-mail account. You can also select at what intervals you would like to receive this information about your network.		Enable / Disable E-mail Notification Set Email Settings Set Email Notification Schedule
System		The System page allows you to reboot your CTR router to the factory default settings without using the hardware Reset button found just inside and under the battery cover of the unit. Remember, restoring the Default Factory Settings will erase all of your configured changes.		Reboot the Device Restore all Settings to the Factory Defaults
Firmware		The Firmware page allows you to check for and install the latest version of your CTR software. Upgrades improve the functionality and performance of the CTR. You can set the CTR to notify you by E-Mail when a newer version of the software is available.		Firmware information and latest version check Download Firmware Upgrade section Set Firmware Upgrade notification options
Dynamic DNS		The DDNS feature allows you to host a server (Web, FTP, etc) using a domain name that you have purchased (www.yourchoiceofname.com) with your dynamically assigned IP Address. Most Broadband Internet Service Providers assign dynamic (changing) IP Addresses. Using a DDNS service provider, your friends can enter your host name to connect to your server no matter what your IP address is.		Enable / Disable DNS Dynamic DNS Settings

STATUS Topics



BASIC	ADVANCED	TOOLS	STATUS	HELP
-------	----------	-------	--------	------

Device Info	All of your Internet and network connection details are displayed on this page. The firmware version is also displayed here.	View Time and Firmware Version View WAN Settings View LAN Settings View Wireless LAN Settings View LAN Computers
Wireless	Use this option to view the wireless clients that are connected to your network.	View Number of Wireless Clients View Trusted Clients
Routing	This page displays the routing details configured for your CTR.	View Routing Settings
Logs	This page allows you to view the Syslog information about your CTR. You can define what types of events you want to view and the event levels to view.	Set Syslog Options View / Edit Syslog Details
Statistics	View all your network's Traffic Statistics from this page. Traffic Statistics display Receive and Transmit packets passing through your CTR router.	LAN Statistics WAN Statistics Wireless Statistics
Active Sessions	This page displays the full details of the active sessions to your CTR router.	View Active Sessions

HELP Topics



BASIC	ADVANCED	TOOLS	STATUS	HELP
-------	----------	-------	--------	------

Subtopics	Each of the sections on the Help Topics page contain a hyperlink for quick and easy location of the subtopics you would like to view and/or edit. Simply click the topic page in the side navigation bar or click the subtopics in each section of the page you would like to jump to.	Hyperlinks to each main and subtopic of the Help and Setup Pages.
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GLOSSARY Pages



BASIC	ADVANCED	TOOLS	STATUS	HELP
-------	----------	-------	--------	------

Help
MENU
BASIC
ADVANCED
TOOLS
STATUS
GLOSSARY

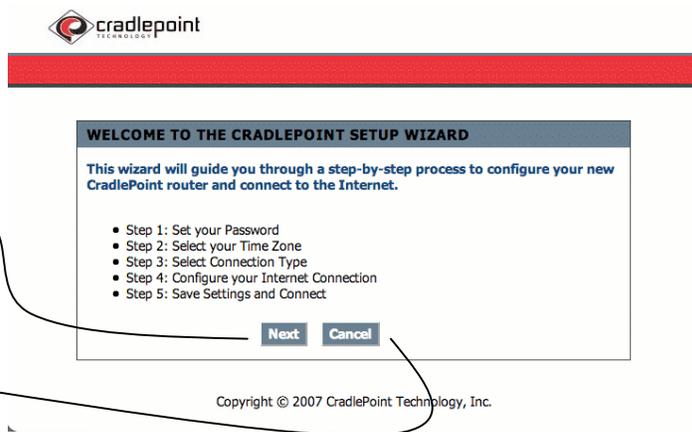
The glossary provides you with definitions to aide your understanding of the CTR functionality. Hyperlinks by letter to jump to lexigraphically ordered sections of the page.

The Wizards

To begin, select **Launch Internet Connection Setup Wizard** on the main screen of the Help Pages.

Select **Next** to go to the next step.

You can select **Cancel** at anytime to return to the Help page.



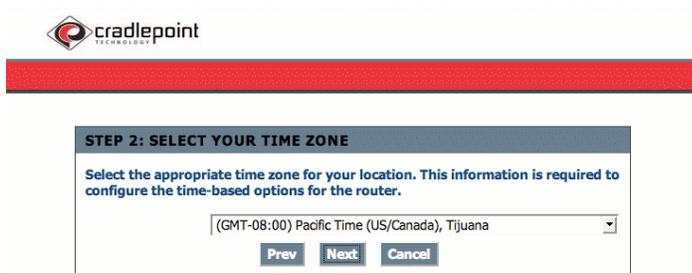
main

When setting your password, it is secure to use a combination of letters and numbers while using something that is easy for you to remember.

You can select **Prev** at anytime to return to the previous step.



more letters



Select the arrow on the pull down menu to show all available time zones and chose the zone which applies to your area.

STEP 3: SELECT CONNECTION TYPE

Select the appropriate connection for the router.

- Cellular Phone**
Choose this option if a Cellular phone is connected to the router.
- Cable/DSL Modem**
Choose this if a Cable or DSL modem is connected to the router.

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If you are using your cell phone or USB cellular modem.

If you are using Cable/DSL or other Ethernet LAN connection over Ethernet to connect to the Internet.

STEP 4: CONFIGURE YOUR INTERNET CONNECTION

Please select which Cellular data plan you are using.

If your Internet Service Provider was not listed or you don't know who it is, please select the Internet connection type below:

- Username / Password Connection (PPP)**
Choose this option if your Internet connection requires a username and password to get online. Most DSL modems use this connection type of connection.

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Use the pull down menu to select your cellular plan.

Select if your network requires a password.

SET USERNAME AND PASSWORD CONNECTION (PPP)

To set up this connection you will need to have a Username and Password from your Internet Service Provider. If you do not have this information, please contact your ISP.

Address Mode: Mobile IP Static IP
Handset Protocol:
IP Address:
User Name:
Password:
Verify Password:
Dial String:
Service Name: (optional)

Note: You may also need to provide a Service Name. If you do not have or know this information, please contact your ISP.

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This information can be obtained by contacting your ISP (Internet Service Provider). If you are using your cellular phone, your ISP is your cellular operator such as Verizon, Sprint, T-Mobile, etc.



SETUP COMPLETE!

The Setup Wizard has completed. Click the Connect button to save your settings and reboot the router.

Prev Cancel **Connect**

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Select when you are finished.

Abandon all changes and return to the main Help Page.

Go Back.



SUCCESS

The new settings have been saved.

The router must be rebooted before the new settings will take effect. You can reboot the router now using the button below, or make other changes and then use the reboot button on the Tools/System page.

Reboot the Device Continue

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Reboot the CTR to save and use your changes now.

Continue without saving changes until next reboot.



REBOOTING...

Please wait 6 seconds.

If you changed the IP address of the router you will need to change the IP address in your browser before accessing the configuration Web site again.

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Allow a few moments for the CTR to complete its reboot cycle.

You will be asked to enter your new password to login.

Your Basic Internet settings have now been configured!

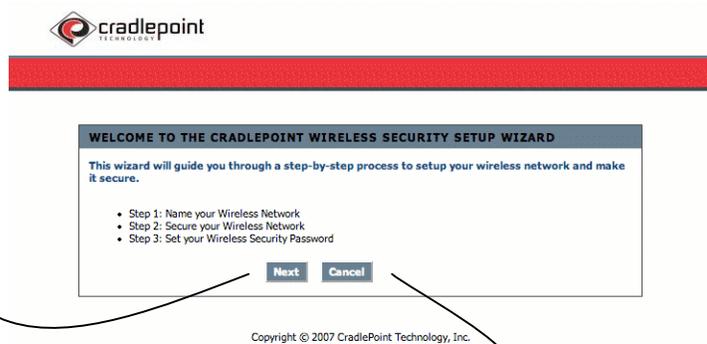
After your changes have been saved, log into the CTR using your new password.

Select

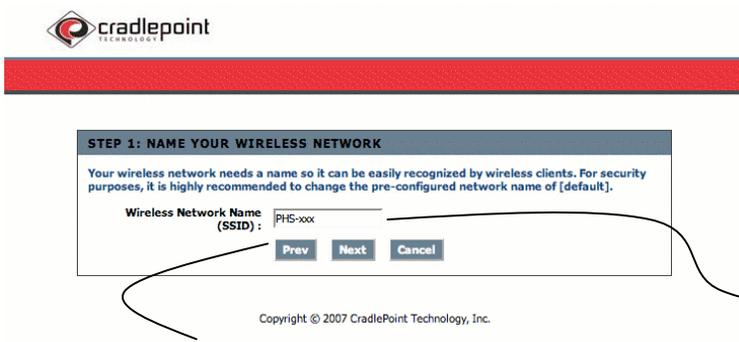
Launch Wireless Security Setup Wizard

on the main screen of the Help and Setup page.

Select to go to the next step.



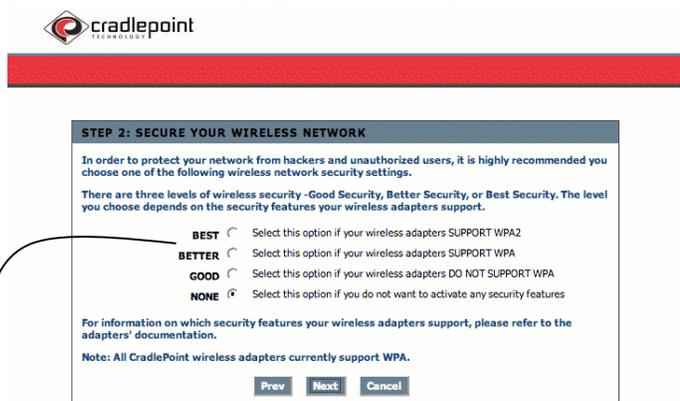
Select to go back to the main screen of the Help and Setup Pages at anytime.



This section will rename your wireless network. It is the name others will see as well the name shown in your list of available wireless networks on your computer.

Go Back.

Security is an important aspect of your online lifestyle. It is recommended that you select "BETTER" or "BEST" to ensure minimal attack from malicious Internet users.





SETUP COMPLETE!

Below is a detailed summary of your wireless security settings. Please print this page out, or write the information on a piece of paper, so you can configure the correct settings on your wireless client adapters.

Wireless Network Name (SSID): PHS-xxx

Prev Cancel Save

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After you reboot your CTR be sure to look for it by the new SSID. (Network Name)



SUCCESS

The new settings have been saved.

The router must be rebooted before the new settings will take effect. You can reboot the router now using the button below, or make other changes and then use the reboot button on the Tools/System page.

Reboot the Device

Continue

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Select Reboot the Device to save your changes. Allow a few moments for your CTR to reboot and your computer to re-associate with the network.

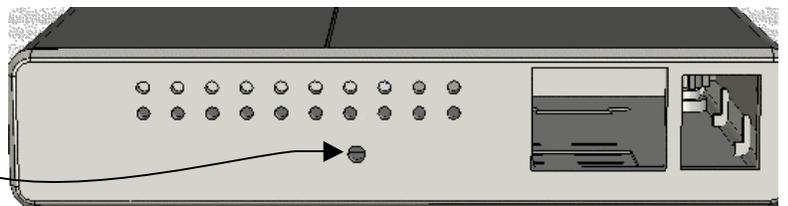
When you login you will be asked to enter your password according to your new security settings. If at anytime you cannot remember your password you can reset the CTR to its factory default settings.

Factory Default Reset

The Factory Default reset will clear all your saved settings on the CTR. The user name and password will revert back to the original "CTR-xxx" SSID and use the last 6 digits of the MAC Address for the password.

To use the factory default reset, simply:

1. Un-plug the CTR from external power.
2. Locate the Factory Reset button at the rear of the unit.
3. Press and hold the Reset button while you plug the CTR back into external power.
4. Release the button after you see the LEDs flash ON, OFF, then ON again.



All your settings will return to the factory presets as the CTR reboots.

Tips and Troubleshooting

The Error Pages

DATA SERVICE UNAVAILABLE

The KRT is designed to recognize if your cellular phone is not enabled with a tethered data plan required to operate as a modem. If you see this page, first verify that your phone or modem is correctly connected to the KRT. You may need to contact your cellular service company for details about your data plan.



DATA SERVICE UNAVAILABLE

Your CradlePoint Technology PHS has tried negotiating an Internet connection, but failed. Please verify that you have a 3G data plan from your wireless service provider. For more help on this subject please select [CradlePoint Technology PHS Help section](#). Change your login and security settings by selecting [CradlePoint Technology PHS Setup section](#).

PHONE STATUS

Battery Status:	Status Unavailable
Battery Level:	Status Unavailable
Signal Strength:	Status Unavailable

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PHONE NOT AVAILABLE

You have attempted to access the Internet without having your phone connected to the CradlePoint Technology PHS. Please plug your phone into the CradlePoint Technology PHS and try again. For more help on this subject please select [CradlePoint Technology PHS Help section](#). Change your login and security settings by selecting [CradlePoint Technology PHS Setup section](#).

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PHONE NOT AVAILABLE

This page may occur for several reasons:

Your cellular phone or USB modem may not be securely connected to the KRT.

Your phone is not on or in "modem" mode.

You should double-check your connections, and verify the proper operation of your handset or modem. In the case of a USB modem, refer to your modem manual to confirm that you have proper coverage and signal strength by observing its indicator lights.

UNABLE TO CONNECT TO WAN

If this page appears, confirm that your phone or USB modem is turned on, properly connected, has sufficient battery, and adequate coverage and signal strength.

If you still are not able to get a connection, check the following:

Confirm that the cable connecting your phone or modem to the CTR is good – try an alternative in case there is a poor connection. The data port on your phone is bad. The battery power on the KRT is low and needs to be connected to external power. Your cellular phone may be malfunctioning and/or your service provider is having technical problems.



UNABLE TO CONNECT TO WAN

The CradlePoint Technology PHS is still negotiating an Internet connection. Please wait a few seconds and then try again. For more help on this subject please select [CradlePoint Technology PHS Help section](#). Change your login and security settings by selecting the [CradlePoint Technology PHS Setup section](#).

PHONE STATUS

Battery Status:	Status Unavailable
Battery Level:	Status Unavailable
Signal Strength:	Status Unavailable

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HANDESET ERROR

Your handset is unable to communicate with your service provider.
This can be caused by a poor signal or the lack of a proper service plan.
For more help on this subject please select [CradlePoint Technology PHS Help section](#).
Change your login and security settings by selecting [CradlePoint Technology PHS Setup section](#).

PHONE STATUS

Battery Status: Status Unavailable
Battery Level: Status Unavailable
Signal Strength: Status Unavailable

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HANDESET ERROR

If your phone has a bad signal, no service plan, a bad connection port, a low battery, is OFF, or malfunctioning in some way, you may get this page.

Try turning your phone OFF, then back ON or contact your service provider for technical assistance. If you have been successful at connecting before, try relocating the phone or modem to insure you have proper coverage.

DNS POISONING

Occasionally after changing settings and rebooting the KRT the browser's cache needs to be cleared. If you see this page simply close completely out of your browser and launch it again.



DNS POISONING HAS OCCURRED

Restart your web browser.
It may be necessary to close your web browser and restart it. Sometimes web browsers cache invalid URLs when first logging onto the CradlePoint Technology PHS. Restarting your web browser will clear it's cache and you should be able to surf the Internet without problems.

PHONE STATUS

Battery Status: Status Unavailable
Battery Level: Status Unavailable
Signal Strength: Status Unavailable

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MAXIMUM NUMBER OF USERS CONNECTED

You have been denied access to the Internet because the maximum number of Wi-Fi users was exceeded.
Contact owner of the CradlePoint Technology PHS, wait until another user logs off, or buy a new CradlePoint Technology PHS.
For more help on this subject please select [CradlePoint Technology PHS Help section](#).
Change your login and security settings by selecting [CradlePoint Technology PHS Setup section](#).

PHONE STATUS

Battery Status: Status Unavailable
Battery Level: Status Unavailable
Signal Strength: Status Unavailable

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MAXIMUM NUMBER OF USERS CONNECTED

Appearance of this page indicates the number of users/clients allowed on your network has been reached.

Either the maximum allowed clients setting is set too low or already at full capacity.

The number of clients allowed on your network is a setting you can change in the Help and Setup Pages on your KRT. The setting is by default only set to 1 for your security and can be adjusted in the Help and Setup Pages.

Security Notes

It is highly recommended that you follow the next few suggestions to help ensure your security while using the KRT:

1. Change Admin Password

Changing the password to access your new router is the first step in securing your network. This can be done through the Wizard or on the Admin Page of the Tools tab. Make sure that the password you choose is not commonly known or something that is easy to guess such as your last name or your pet's name. Try using a combination of letters and numbers (alpha-numeric) to deter intruders from breaking into your network. Your private information should be kept private.

2. Disable DHCP and use Static IP addresses or Use Static DHCP and limit scope to the amount of users on your network.

The KRT comes with the setting for maximum users on your network set to 1. Until you change this setting you will be the only computer allowed to access the network. Even so, in the event that an intruder manages to gain access to your network, having DHCP enabled makes it easier for the intruder to access other computers on your network.

There are two methods to prevent this:

One way is to disable DHCP and use static IP addressing on all the devices connected to your network. This would mean that the intruder would have to know what network your devices are on in order to access them. However, this would make it more difficult to share access with new or occasional users.

The second way is to change the scope of the DHCP server to only include enough IP addresses (or IP range) for the devices in your network. You can then use the Static DHCP feature of the router to assign an IP address to each device on your network. Static DHCP still dynamically assigns an IP address to your network devices but only allows for those defined devices to obtain an IP address.

3. Change the default LAN IP address

Change the default LAN IP address from 192.168.0.1 to an alternate IP address. There are 3 ranges of IP addresses that have been reserved for use on Private Networks.

10.0.0.0 - 10.255.255.255 (10.0.0.0/8)
172.16.0.0- 172.31.255.255 (172.16.0.0/12)
192.168.0.0 - 192.168.255.255 (192.168.0.0/16)

CradlePoint KRT routers use 192.168.0.1 as their default LAN IP address. Choosing an alternate IP address lessens the probability of an intruders knowing what IP network your devices are on.

4. Set up MAC Filtering

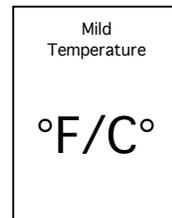
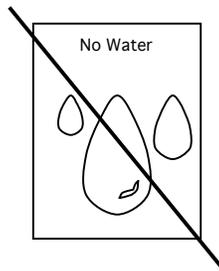
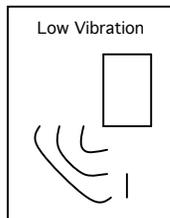
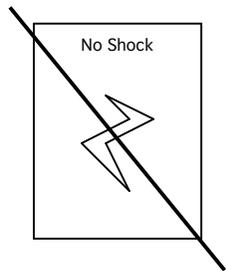
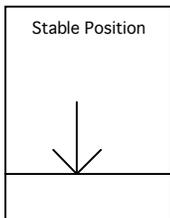
Each networking device (router, network card, etc) on a network contains a unique hexadecimal number that identifies that specific product. This number is referred to as a MAC address. MAC filtering allows you to create a list of the MAC address of each device on your network and only allows these specific devices to associate with your network. With this feature enabled, devices attempting to connect to your network with a MAC address that is not in the list you created, will be denied access.

THE KRT COMES TO YOU WITH YOUR SECURITY IN MIND:

- The Personal HotSpot is equipped with several features designed to maintain security and provide easy setup to with any Cellular data network.
- PCs Hidden by NAT
NAT opens a temporary path to the Internet for requests originating from the local network. Requests originating from outside the LAN are discarded, preventing users outside the LAN from finding and directly accessing the PCs on the LAN.
 - IP Address Sharing by NAT
The Personal HotSpot allows several networked PCs to share an Internet account using only a single IP address, which may be statically or dynamically assigned by your Internet service provider (ISP). This technique, known as NAT, allows the use of an inexpensive single-user ISP account.
 - Automatic Configuration of Attached PCs by DHCP
The Personal HotSpot dynamically assigns network configuration information, including IP, gateway, and domain name server (DNS) addresses, to attached PCs on the LAN using the Dynamic Host Configuration Protocol (DHCP). This feature greatly simplifies configuration of PCs on your local network.
 - DNS Proxy
When DHCP is enabled and no DNS addresses are specified, the Personal HotSpot provides its own address as a DNS server to the attached PCs. The Personal HotSpot obtains actual DNS addresses from the ISP during connection setup and forwards DNS requests from the LAN.

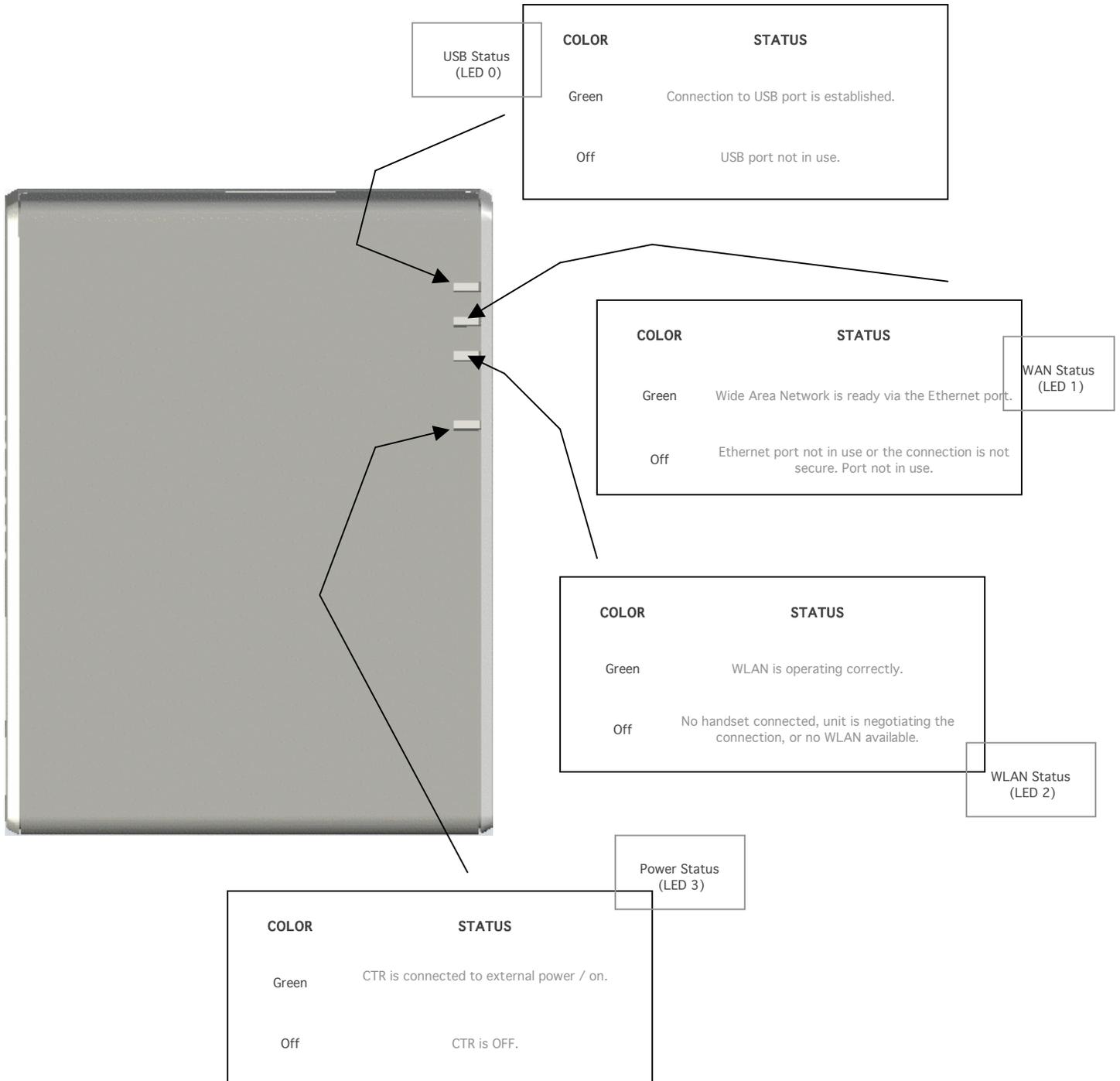
Care and Maintenance

<p>Operating Temperatures</p>	<p>The operating temperatures should remain between 0°C to +55°C degrees. Temperatures outside this range may cause damage to your KRT.</p>
<p>Storage Temperatures</p>	<p>Store your KRT in temperatures not to exceed the bounds of -40°C to +85°C. Temperatures outside this range may cause damage to your KRT.</p>
<p>Humidity</p>	<p>Exposure to humidity can cause your KRT to malfunction and/or cause permanent damage. To avoid this, keep your router at humidity levels between 0 and 70%.</p>
<p>Shock and Vibration</p>	<p>The KRT may stop functioning if exposed to too much vibration or electrical shock. It is recommended that you place the KRT out of areas that may introduce these factors. Contact the manufacturer for specific details.</p>
<p>Network Range and Interference</p>	<p>Placing the KRT near metal cabinets or computer cases, large objects such as refrigerators, or around windows tinted with Metallic-based UV coatings can cause interference. If you are experiencing problems with the range or interference be sure that your KRT is at least placed as high as possible if it cannot be placed in the center of your preferred coverage area.</p>



Indicators (LEDs)

There are three dual LEDs used to display the device status and operation. The LED functions are identified below. The LED location and order are identified on the PCB reference drawing. The normal operating states are described below. In addition, LED's flash during power on, power off, reset and factory reset functions to provide a visual feedback to the user of what is happening.



Glossary and Setup Details

A

Access Control List	ACL. Database of network devices that are allowed to access resources on the network.
Access Point	AP. Device that allows wireless clients to connect to it and access the network Ad-hoc network - Peer-to-Peer network between wireless clients
Address Resolution Protocol	ARP. Used to map MAC addresses to IP addresses so that conversions can be made in both directions.
ADSL	Asymmetric Digital Subscriber Line
Advanced Encryption Standard	AES. Government encryption standard
Alphanumeric	Characters A-Z and 0-9
Antenna	Used to transmit and receive RF signals.
AppleTalk	A set of Local Area Network protocols developed by Apple for their computer systems
AppleTalk Address Resolution Protocol	AARP. Used to map the MAC addresses of Apple computers to their AppleTalk network addresses, so that conversions can be made in both directions.
Application layer	7th Layer of the OSI model. Provides services to applications to ensure that they can communicate properly with other applications on a network.
ASCII	American Standard Code for Information Interchange. This system of characters is most commonly used for text files
Attenuation	The loss in strength of digital and analog signals. The loss is greater when the signal is being transmitted over long distances.
Authentication	To provide credentials, like a Password, in order to verify that the person or device is really who they are claiming to be
Automatic Private IP Addressing	APIPA. An IP address that a Windows computer will assign itself when it is configured to obtain an IP address automatically but no DHCP server is available on the network.

B

Backward Compatible	The ability for new devices to communicate and interact with older legacy devices to guarantee interoperability
Bandwidth	The maximum amount of bytes or bits per second that can be transmitted to and from a network device
Basic Input/Output System	BIOS. A program that the processor of a computer uses to startup the system once it is turned on
Baud	Data transmission speed
Bit rate	The amount of bits that pass in given amount of time bit/sec - bits per second
BOOTP	Bootstrap Protocol. Allows for computers to be booted up and given an IP address with no user intervention
Bottleneck	A time during processes when something causes the process to slowdown or stop all together
Broadband	A wide band of frequencies available for transmitting data
Broadcast	Transmitting data in all directions at once
Browser	A program that allows you to access resources on the web and provides them to you graphically

C

Cable modem	A device that allows you to connect a computer up to a coaxial cable and receive Internet access from your Cable provider
CardBus	A newer version of the PC Card or PCMCIA interface. It supports a 32-bit data path, DMA, and consumes less voltage

Carrier Sense Multiple Access/Collision Avoidance	CSMA/CA
Carrier Sense Multiple Access/Collision Detect	CSMA/CD
CAT 5	Category 5. Used for 10/100 Mbps or 1Gbps Ethernet connections
Channel	The channel the wireless signal is transmitted on.
Client	A program or user that requests data from a server.
Collision	When do two devices on the same Ethernet network try and transmit data at the exact same time.
Cookie	Information that is stored on the hard drive of your computer that holds your preferences to the site that gave your computer the cookie.
Cracker	A talented and malicious computer user who gains unauthorized access to a computer or network of computers with the intention of stealing, maliciously modifying, or destroying information. Also known as a "Black Hat Hacker." Often mistakenly referred to as a Hacker.
CSMA/CA	Carrier Sense Multiple Access/Collision Avoidance CSMA/CD - Carrier Sense Multiple Access/Collision Detection

D

Data	Information that has been translated into binary so that it can be processed or moved to another device
Data Encryption Standard	Uses a randomly selected 56-bit key that must be known by both the sender and the receiver when information is exchanged
Data-Link layer	The second layer of the OSI model. Controls the movement of data on the physical link of a network
Database	Organizes information so that it can be managed updated, as well as easily accessed by users or applications
DB-25	A 25 pin male connector for attaching External modems or RS-232 serial devices DB-9 - A 9 pin connector for RS-232 connections
dBd, dBi, dBm	decibels related to dipole antenna, decibels relative to isotropic radiator, decibels relative to one milliwatt
Decrypt	To unscramble an encrypted message back into plain text
Default	A predetermined value or setting that is used by a program when no user input has been entered for this value or setting
Default Subnet Mask	The subnet on your router on the local area network
Demilitarized zone - DMZ	A single computer or group of computers that can be accessed by both users on the Internet as well as users on the Local Network, but that is not protected by the same security as the Local Network.
DHCP	Dynamic Host Configuration Protocol. Used to automatically assign IP addresses from a predefined pool of addresses to computers or devices that requests them (See Also DHCP IP Address Range, Number of DHCP Dynamic Clients, Static DHCP Clients, DHCP Lease Time)
DHCP IP Address Range	This option defines the range of addresses available for the router to assign to your internal network. If you have any devices using Static IP addresses, be sure the addresses do not fall within the range defined here.
DHCP Lease Time	The amount of time a computer may have an IP address before it is required to renew the lease. The lease functions just as the lease on an apartment would. The initial lease designates the amount of time before the lease expires. If the tenant wishes to retain their address when the lease is expired then the lease is established. If the lease is no longer needed then the address is allowed to be reused by someone else.
Digital certificate	An electronic method of providing credentials to a server in order to have access to it or a network

Direct Sequence Spread Spectrum – DSSS	Modulation technique used by 802.11 b wireless devices
Domain Name System – DNS	Translates Domain Names to IP addresses
Data Over Cable Service Interface Specifications – DOCSIS	The standard interface for cable modems
Domain name	A name that is associated with an IP address
Download	To send a request from one computer to another and have the file transmitted back to the requesting computer
DSL – Digital Subscriber Line	High bandwidth internet connection over telephone lines
Duplex	Sending and receiving data at the same time
DDNS – Dynamic DNS service	Is provided to companies to allow users with Dynamic IP Addresses to obtain a Domain Name that will always be linked to their changing IP Address. The IP Address is updated either by client software or by a router that supports DDNS, whenever the IP Address changes
Dynamic IP Address	IP address that is assigned by a DHCP server and that may change. Cable Internet providers usually use this method to assign IP Addresses to their customers

E

EAP	Extensible Authentication Protocol
Email	Electronic Mail is a computer-stored message that is transmitted over the Internet
Encryption	Converting data into cyphertext so that it cannot be easily read
Ethernet	The most widely used technology for Local Area Networks

F

Fiber optic	A way of sending data through light impulses over glass or plastic wire or fiber
File server	A computer on a network that stores data so that the other computers on the network can all access it
File sharing	Allowing data from computers on a network to be accessed by other computers on the network will different levels of access rights
Firewall	A device that protects resources of the Local Area Network from unauthorized users outside of the local network
Firmware	Programming that is inserted into a hardware device that tells it how to function Fragmentation – Breaking up data into smaller pieces to make it easier to store
FTP – File Transfer Protocol	Easiest way to transfer files between computers on the Internet Full-duplex – Sending and Receiving data at the same time

G

Gain	The amount an amplifier boosts the wireless signal
Gateway	A device that connects your network to another, like the your computer to the internet
Gbps – Gigabits per second	
Gigabit Ethernet	Transmission technology that transfers data at a rate of 1 billion bits per second
GUI – Graphical User Interface	A visual way of interacting with a computer using such items as windows, icons, and menus. Graphical user interfaces are used by most modern operating systems

H

H.323	A standard that provides consistency of voice and video transmissions and compatibility for video conferencing devices
Hacker	An enthusiastic and skillful computer programmer or user commonly mistaken by the media for a Cracker or Script Kiddie. (See Cracker)

Half Duplex	Data cannot be transmitted and received at the same time
Hashing	Transforming a string of characters into a shorter string with a predefined length
Hexidecimal	Characters 0-9 and A-F used to represent numbers also known as base 16
HomePNA, HomePNF	Networking over telephone lines, Networking standard that combines 802.11b and DECT(Digital enhanced cordless communication) that provides speeds up to 1.6 megabits per second and a distance of 150ft using a Frequency Hopping transmission method
Hop	The action of data packets being transmitted from one to another Host Computer on the network
HTTP – Hypertext Transfer Protocol	Used to transfer files from HTTP servers (web servers) to HTTP clients (web browsers)
HTTPS – Hypertext Transfer Protocol over SSL	Used to encrypt and decrypt HTTP transmissions, also known as Secure HTTP
Hub	A networking device that connects multiple devices together

I

ICMP – Internet Control Message Protocol	One of the core protocols of the Internet protocol suite. Used mainly by a networked computers' operating system to send error messages for IP datagrams, diagnostics, or routing purposes
IGMP – Internet Group Management Protocol	Used to make sure that computers can report their multicast group membership to adjacent routers
IIS – Internet Information Server	A Web server and FTP server provided by Microsoft
IKE – Internet Key Exchange	Used to ensure security for VPN exchange
Infrastructure	In terms of a wireless network this is when wireless clients use an access point to gain access to the network
Input Port Range	(See Special Applications page) The port range that you want to open to internet traffic
Interface	(See Routing page) Specifies the next hop to be taken if the route specified is used. A gateway of 0.0.0.0 implies there is no next hop and the IP address matched is connected directly to the router on the interface specified (either LAN or WAN)
Internet	A system of worldwide networks which uses TCP/IP to allow for resources to be accessed from computers around the world
Internet Explorer	One of many web browsers available for computers. See also Mozilla, Firefox, Konquerer, Opera, Safari
Internet Protocol	The method of transferring data from one computer to another on the Internet
ISP – Internet Service Provider	Company that provides internet to individuals or companies
Interoperability	The ability for products to interact with each other without much consumer interaction. Generally seen as an asset to any product
Intranet	A private network
Intrusion Detection	A type of security that scans a network to detect attacks coming from inside and outside the network
IP – Internet Protocol	
IP Address	A 32-bit number, when talking about Internet Protocol Version 4, that identifies each computer that transmits data on the internet or intranet
IPv6 – Internet Protocol Version 6	Uses 128 bit addresses and was developed to solve the problem that we face running out of IP version 4 addresses
IPX – Internetwork Packet Exchange	A networking protocol developed by Novell to enable their Netware clients and servers to communicate

J

Java	A programming language used to create programs and applets for web pages
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K

Kbps	Kilobits per second
Kerberos	A method of securing and authenticating requests for services on a network

L

LAN – Local Area Network	A group of computers in a building that usually access files from a server
Latency	The amount of time a packet takes to travel from one location to another on a network. Also referred to as delay.
LED	Light Emitting Diode
Legacy	Older devices or technology

M

MB – MegaByte	
Mbps	Megabits per second
MAC Address	A unique hardware address for devices on a LAN. Each networking device (router, network card, etc) on a network contains a unique hexadecimal number that identifies that specific product.
MAC Filtering	MAC filtering allows you to create a list of the MAC address of each device on your network and only allows these specific devices to associate with your network. With this feature enabled, devices attempting to connect to your network with a MAC address that is not in the list you created, will be denied access.
Metric	(See Routing page) Specifies the interface, LAN or WAN, that the IP Packet must use to transit out of the router when the selected route is used
MIB - Management Information Base	A set of objects that can be managed by using SNMP
MTU – Maximum Transmission Unit	The largest packet that can be transmitted on a packet based network like the internet
Multicast	Sending data from one device to many devices on the network

N

NAT – Network Address Translation	Allows many private IP addresses to connect to the Internet, or another network, through one IP address
NetBEUI	NetBIOS Extended User Interface is a Local Area Network communication protocol. This is an updated version of NetBIOS
NetBIOS	Network Basic Input/Output System
NetMask	Determines what portion of an IP address designates the Network and which part designates the Host
NetWare	Server software developed by Novell
NIC – Network Interface Card	A card installed in a computer or built onto the motherboard that allows the computer to connect to a network
Network Layer	The third layer of the OSI model which handles the routing of traffic on the network.
Number of Dynamic DHCP Clients	In this section, you can see what LAN devices are currently leasing IP addresses. The DHCP Client table displays the number of clients that are receiving an IP address from the router. The computer name, MAC address, and IP address assigned to each computer are displayed here as well. You can Revoke IP addresses in this section. The revoke option allows you to take away a leased IP address from a client. This feature is useful for freeing up addresses when the client table is full or nearly full. Be sure to only revoke addresses from devices that are no longer needed on the network.
NTP – Network Time Protocol	Used to synchronize the time of all the computers on the network

O

OSI – Open Systems Intercommunication	The reference model for how data should travel between two devices on a network.
OSPF – Open Shortest Path First	A routing protocol that is used more than RIP in larger scale networks because only changes to the routing table are sent to all the other routers in the network as opposed to sending the entire routing table at a regular interval, which is how RIP functions.

P

Password	A sequence of characters that is used to authenticate requests to resources on a network
Personal Area Network	The interconnection of networking devices within a range of 10 meters
Physical Layer	The first layer of the OSI model, providing the hardware a means of transmitting electrical signals on a data carrier
PoE – Power over Ethernet	The means of transmitting electricity over the unused pairs in a CAT5 cable.
Policy Name	(See Access Control page) The name of the access control policy you have or are creating.
POP3 – Post Office Protocol 3	Used for receiving mail
PPP – Point to Point Protocol	Used for two computers to communicate with each other over a serial interface, like a phone line
Preamble	Used to synchronize communication timing between devices on a network
Private Port	The port that will be used on your internal network
Public Port	The port that will be accessed from the internet

Q

QoS	Quality of Service
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R

RADIUS – Remote Authentication Dial-in User Service	Allows for remote users to dial into a central server and be authenticated in order to access resources on a network.
Remote Management	Allows you to manage your router from anywhere with an internet connection. See Tools→ Admin
Remote Management Port	The port that will be accessed from the internet.
Rendezvous	Apple's version of UpnP, which allows for devices on a network to discover each other and be connected without the need to configure any settings.
Repeater	Retransmits the signal of an Access Point in order to extend its coverage.
RIP – Routing Information Protocol	Used to synchronize the routing table of all the routers on a network.
RIP Announcement	This option is used with multiple routers to broadcast routing information.
Router Metric	This option is used if you have multiple routers.
RJ-11, RJ-45	The most commonly used connection method for telephones, The most commonly used connection method for Ethernet.
RS-232C	The interface for serial communication between computers and other related devices.
RSA Algorithm	Used for encryption and authentication.

S

Samba	A freeware program that allows for resources to be shared on a network. Mainly used in Unix based operating systems
Server	A computer on a network that provides services and resources to other computers on the network
Session Key	An Encryption and decryption key that is generated for every communication session between two computers
Session Layer	The fifth layer of the OSI model which coordinates the connection and communication between applications at both ends
SMTP – Simple Mail Transfer Protocol	Used for sending and receiving mail

SNMP – Simple network Management Protocol	Govens the management and monitoring of network devices
Special Applications	The Special Application section is used to open single or multiple ports on your router when the router senses data sent to the Internet on a 'trigger' port or port range. Special Applications rules apply to all computers on your internal network.
SSH – Secure Shell	A command line interface that allows for secure connections to remote computers
SSID – Service Set Identifier	A name for a wireless network
SPI - Stateful Packet Inspection	A feature of a firewall that monitors outgoing and incoming traffic to make sure that only valid reponses to outgoing requests are allowed to pass through the firewall. When SPI is enabled, the extra state information will be reported on the Status > Active sessions page.
Static DHCP Client	Static DHCP Clients receive the same IP address all the time. This is almost the same as if a device has a static IP address except that it must still actually request an IP address from the CradlePoint Router. The CradlePoint Router will provide the device the same IP address all the time. Servers on your network should either use a static IP address or this option. To input the MAC address of your system, enter it in manually or connect to the CradlePoint Router's Web-Management interface from the system and click the Copy Your PC's MAC Address button.
Static DHCP Client List	Entries on this list can be enabled/disabled by toggling the Enable checkbox. Entries can be modified by clicking on the paper and pencil icon. To delete an entry, click on the trash can icon. After you've completed all modifications or deletions, you must click the Save Settings button at the top of the page to save your changes. The router must reboot before new settings will take effect. You will be prompted to Reboot the Device or Continue. If you need to make additional settings changes, click Continue. If you are finished with your configuration settings, click the Reboot the Device button.
Static IP Address	An IP address that is entered manually on the device.
Subnet Mask	Determines the portion of an IP address designated to the Network and the portion dedicated to the Host. (See also Default Subnet Mask)

T

TCP – Transmission Control Protocol	Applications on networked hosts use TCP to create connections to one another, over which they can exchange data. TCP is the layer above the IP and below the application.
TCP/IP – Transmission control Protocol/Internet Protocol	Also known as the Internet Protocol Suite. Implement the protocol stack on which networks run.
Throughput	The amount of data that can be transfered in a given time period.
Trace route	A utility that displays the routes between your computer and a specific destination.
Transmission Rate	Speed of data on the Local Area Network
Trigger Port Range	(See Special Applications page) Enter the outgoing port range used by your application. Select the outbound protocol used by your application.

U

UDP – User Datagram Protocol	Allows programs on networked computer to send short messages called datagrams to one another.
UNC - Universal Naming Convention	Allows for shares on a computer to be identified without having to know what storage device it is on
Unicast	Communication between a single sender and reciever
UPnP – Universal Plug and Play	The feature which allows devices to identify eachother on a network without requiring set up by the user
URL – Uniform Resource Locator	A unique address for files accessible on the internet

V

VPN – Virtual Private Network	A secure tunnel over the internet to connect remote offices or users to their company's network
Virtual Sever	<p>The Virtual Server option gives Internet users access to services on your LAN. This feature is useful for hosting online services such as FTP, Web, or Game Servers. For each Virtual Server, you define a public port on your router for redirection to an internal LAN IP Address and port.</p> <p>Example: You are hosting a Web Server on a Laptop or PC that has Private IP Address of 192.168.0.50 and your ISP is blocking Port 80.</p> <ol style="list-style-type: none"> 1. Name the Virtual Server Rule (ex. Web Server) 2. Enter in the IP Address of the machine on your LAN 192.168.1.1 3. Enter the Private Port as [80] 4. Enter the Public Port as [8888] 5. Select the Protocol - TCP 6. Ensure the schedule is set to Always 7. Check the Add Rule to add the settings 8. Repeat these steps for each Virtual 9. Server Rule you wish to add. After the list is complete, click Save Settings at the top of the page. <p>With this Virtual Server Rule all Internet traffic on Port 8888 will be redirected to your internal web server on port 80 at IP Address 192.168.0.50.</p>
Virtual Servers List	Entries on this list can be enabled/disabled by toggling the Enable checkbox. Entries can be modified by clicking on the paper and pencil icon. To delete an entry, click on the trash can icon. After you've completed all modifications or deletions, you must click the Save Settings button at the top of the page to save your changes. The router must reboot before new settings will take effect. You will be prompted to Reboot the Device or Continue. Reboot the device if you are satisfied with your settings.
Virtual Server Rule	Name of the virtual server, such as Web Server
Visibility Status	Whether or not the SSID will be visible on the LAN. If this is set to invisible others will not be able to see your network in their list of available networks without special configurations. You will have to connect to an invisible network by manually entering the name into your connect utility on your computer.
VoIP – Voice over Internet Protocol (IP)	Sending voice information over the internet

W

Wake on LAN	Allows you to power up a computer through it's NIC on a WAN.
Web Browser	A utility that allows you to view content and interact with all of the information in the World Wide Web. Examples include: Firefox, Mozilla, Safari, Opera, and lastly though often less flexible and secure, Internet Explorer.
WEP – Wired Equivalent Privacy	Security for wireless networks that is supposed to be compatible to that of a wired network.
Wi-Fi	Wireless Fidelity
WPA – WiFi Protected Access	An updated version of security for wireless networks that provides authentication as well as encryption.
Wide Area Network	A network spanning a large geographical area or consisting of more than one LAN.
Wireless Network Name	The SSID for the router.
WISP - Wireless ISP	A company that provides a broadband connection over wireless connections to the internet.

WLAN - Wireless LAN	Connecting to a Local Area Network over one of the 802.11 wireless standards
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X

Y

Yagi Antenna	A directional antenna used to concentrate a wireless signal on a specific location
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Z